I. Notice of the Crustacea collected by Prof. C. F. Hartt on the coast of Brazil in 1867. By Sidney I. Smith.

Read, May 19th, 1869.

In the first volume of these Transactions, Prof. Verrill has noticed the Radiata of the collection made by Prof. Hartt upon the coast of Brazil during the summer of 1867, and the Crustacea of the same collection, having been submitted to me for examination, was found to contain so many species new to the Brazilian fauna that the publication of the following list seemed desirable.

The collection, although quite small in number of specimens and representing only the higher groups of the class, is interesting from the large proportion which it contains of species heretofore known only from the West Indies or Flordia. This is, perhaps, due chiefly to the fact that most of the collections brought from Brazil have been made at Rio de Janeiro where there are no coral reefs, while Prof. Hartt's collection was made principally on the rocky and reef-bearing parts of the coast.

BRACHYURA.

Milnia bicornuta Stimpson.

Pisa bicornuta Latreille, Encyclopédie méthodique, tome x, p. 141 (*teste* Edwards).

Pericera bicorna Edwards, Histoire naturelle des Crustacés, tome i, p. 337, 1834.

Pisa bicorna Gibbes, On the Carcinological Collections of the United States, Proceedings American Association, 3d Meeting, p. 170, 1850.

Pericera bicornis Saussure, Crustacés nouveaux des Antilles et du Mexique, p. 12, pl. 1, fig. 3, 1858.

Milnia bicornuta Stimpson, Notes on North American Crustacea, Annals Lyceum Nat. Hist., New York, vol. vii, p. 180, 1860.

A single specimen collected at the Reefs of the Abrolhos does not differ from Bermuda, Florida and Aspinwall specimens.

Mithraculus coronatus Stimpson.

Cancer coronatus Herbst, Naturgeschichte der Krabben und Krebse, Band i, p. 184, Tab. 11, fig. 63, 1782, and *Cancer Coryphe*, Band iii, zweytes Heft, p. 8, 1801.

Mithraculus coronatus (pars) White?, List of Crust. in the British Museum, p. 7, 1847.

Mithraculus coronatus Stimpson, American Journal Sci., 2d series, vol. xxix, 1860, p. 132; Annals Lyc. Nat. Hist., New York, vol. vii, p. 186, 1860.

Two females of this species were collected by Prof. Hartt at the Reefs of the Abrolhos. They do not differ perceptibly from Aspinwall specimens.

The two specimens give the following measurement:—

Length of carapax,	12·8mm	Breadth of carapax,	17·6mm	Ratio,	1 : 1·37
" " "	17·2	" " "	23·4	"	1 : 1·36

The differences pointed out by Stimpson at once distinguish this species from *M. sculptus*, but White cites the figures of both species under his *Mithraculus coronatus*, so that it is not possible, without an examination of his specimens, to tell which species he had in view.

Mithrax hispidus Edwards.

Cancer hispidus Herbst, op. cit., Band i, p. 247, Tab. 18, fig. 100, 1782.

Mithrax hispidus Edwards, Magasin de Zoölogie, 2e année, 1832; Historie naturelle des Crust., tome i, p. 322, 1834; DeKay, Zoölogy of New York, Crust., p. 4, 1844; Gibbes, loc. cit., p. 172; Stimpson, American Journal Sci., 2d series, vol. xxix, 1860, p. 132; Annals Lyc. Nat. Hist., New York, vol. vii, p. 189, 1860.

Several specimens collected at the Reefs of the Abrolhos agree well with Edwards' and Stimpson's descriptions of this species. The carapax is wholly naked above, the elevations anteriorly are smooth and polished, and there are no spines or prominent tubercles on the median regions. There are two small tubercles just at the base of the frontal teeth, and two more just behind these on the anterior lobes of the gastric region; there are also traces of two tubercles on each of the antero-lateral gastric lobes, and several small tuberculiform elevations on the hepatic and branchial regions near the antero-lateral margin. The external angle of the orbit forms an obtuse tooth not projecting so far forward as the external lobe of the inferior margin; the succeeding tooth of the antero-lateral margin (the second normal) is quite small and obtuse, but the three remaining teeth are spiniform, slender and curved forward; in addition, there is a very small tooth just behind the posterior spine of the antero-lateral margin.

Several specimens give the following measurements:—

Sex.	Length of carapax.	Breadth of carapax including spines.	Ratio.
Male.	15·5mm	18·0mm	1 : 1·16
"	18·9	22·7	1 : 1·20
Female.	13·4	15·4	1 : 1·15
"	15·4	18·0	1 : 1·17

Xantho denticulata White.

Xantho denticulata White, List of Crust. in the British Museum, p. 17 (no description), 1847; Annals and Mag. Nat. Hist., 2d series, vol. ii, p. 285 (*X. denticulatus*), 1848 (*non* Stimpson); Smith, Proc. Boston Soc. Nat. Hist., vol. xii, p. 274, 1869.

A single specimen collected at the Reefs of the Abrolhos does not differ from specimens from Bermuda and Aspinwall.

It seemes to be an uncommon species as it is not mentioned by Dana, Gibbes, or Stimpson, and I have only seen a single one from each of the localities mentioned.

Chlorodius Floridanus Gibbes.

Chlorodius Floridanus Gibbes, loc. cit., p. 175, 1850; Stimpson, Annals Lyc. Nat. Hist., New York, vol. vii, p. 209.

Several specimens, not differing perceptibly from those from Florida and Aspinwall, were collected at the Reefs of the Abrolhos.

Three specimens give the following measurements :—

Sex.	Length of carapax.	Breadth of carapax.	Ratio.
Male.	20·8mm	33·8mm	1 : 1·62
Female.	15·6	23·8	1 : 1·53
"	18·4	29·4	1 : 1·60

Panopeus politus Smith, loc. cit., p. 282, 1869.

Plate I, figure 4.

This species is allied to *P. transversus* Stimpson, and resembles somewhat the *crenatus* of Edwards and Lucas.

The carapax is entirely naked above, broad, moderately convex in two directions, slightly granulous and uneven on the front and along the antero-lateral border, but smooth and highly polished on the median regions and posteriorly. The regions are slightly but distinctly indicated. The gastric region is surrounded by a well marked sulcus, but its lobes are not distinctly indicated except the anterior extremity of the median, which is slender and acutely pointed; the frontal lobes are indicated by slight prominences. The hepatic region is not divided, but there are one or two slight plications on its anterior part parallel to the antero-lateral margin. The cervical suture is distinct in its outer portion but is not indicated near the gastric region. The median and posterior lobes of the branchial region are separated by a distinct depression. The front is strongly deflexed, the edge somewhat beveled from above and four-lobed; the median lobes are very broad, project prominently and are separated by a sharp notch; the lateral lobes project as small narrow teeth. The antero-lateral margin is di-

vided by small notches into four lobes, the first of which is composed of the angle of the orbit coalesced with the second normal tooth; the first lobe is broad, its edge slightly concave and projecting a little at the angle of the orbit; the second and third lobes are broad and truncate; the fourth lobe is small and obtuse and forms the lateral angle of the carapax. From each of the notches slight sulci extend a little way back upon the carapax.

Beneath, the edge of the front is thin, projects obliquely downward and is not expanded in front of the antennulæ. The epistome is smooth, and its labial border has a prominent median lobe and a slight incision each side. The external maxillipeds are smooth; the merus is quadrilateral, its outer edge not projecting, and the antero-exterior angle rounded. The inferior margin of the orbit is divided into two lobes by a broad and shallow sinus; the inner lobe forming a prominent tooth which projects as far forward as the lateral lobe of the front, and the outer lobe broad and slightly prominent. The external hiatus of the orbit is rather broad and shallow. The sub-orbital and sub-hepatic regions are quite granulous. The tubercle beneath the anterior lobe of the antero-lateral margin is depressed, forming only a slight granulous prominence. The sub-branchial region is somewhat hairy. The female abdomen is broadly ovate, the greatest breadth being at the fourth segment.

The chelipeds are slightly unequal, the carpi and hands smooth and evenly rounded above and on the outside. The hands are stout, the fingers obscurely marked with longitudinal impressed lines, and irregularly toothed within, and in the dactylus of the larger hand there is a prominent cylindrical tooth at the base. The ambulatory legs are smooth and nearly naked except a close pubescence upon the dactyli, penultimate segments, and slightly on the carpi.

In an alcoholic specimen the color is light brown above, tinged with bluish purple on the anterior part of the carapax and the upper side of the chelipeds. The fingers are black, lighter at the tips, and the black not spreading upon the palm.

Length of carapax in the single female specimen, $13{\cdot}8^{mm}$; breadth, 21·4: ratio of length to breadth, 1 : 1·55.

Collected at the Reefs of the Abrolhos.

The *P. transversus* Stimpson (Annals Lyc. Nat. Hist., New York, vol. vii, p. 210, 1860) of the west coast of Central America, differs from this species in having the carapax much less distinctly areolated, more regularly oval in outline and smoother and more evenly convex above. The front also projects much less prominently; the antero-lat-

eral margin is smooth and even and the lobes separated by very slight incisions, and the edge of the first lobe is slightly convex and does not project at the angle of the orbit; there is no noticeable depression between the median and posterior lobes of the branchial region; the inferior margin of the orbit is divided by a very slight sinus, and the inner lobe is not at all prominent; and finally, the external maxillipeds are slightly granulated. The color of alcoholic specimens is quite different, being dark slate-brown on the upper side of the carapax and chelipeds.

The *P. crenatus* of Edwards and Lucas is a much smoother species than the *politus*, the regions being scarcely at all defined and the carapax almost perfectly smooth along the front and antero-lateral border. The front is not deflexed, its edge is nearly straight, and beneath it is expanded horizontally in front of the antennulæ; the sub-orbital and sub-hepatic regions are quite smooth, and there is no tubercle beneath the first lobe of the antero-lateral margin; and finally, the antero-exterior angle of the merus of the external maxillipeds projects laterally somewhat beyond the lateral margin and is broadly rounded.*

Panopeus Harttii Smith, loc. cit., p. 280, 1869.

Plate I, figure 5.

The carapax is clothed with scattered hairs along the borders, is broadest at the penultimate teeth of the antero-lateral margins, convex anteriorly but flattened behind, and coarsely granulous on the front and along the lateral borders, but nearly smooth on the median and posterior regions. The gastric region is surrounded by a very deep sulcus, which is particularly marked posteriorly next the cardiac and the posterior part of the branchial region; its median lobe is separated from the antero-lateral lobes by a slight but distinct sulcus; and the anterior lobes are prominent and marked anteriorly by a sharp plication. The hepatic region is prominent, somewhat projecting and bears a transverse, granulous ridge. The cervical suture is very marked and extends as a broad depression quite to the gastric region. The median and posterior lobes of the branchial region are separated by a slight depression. The front is very much deflexed and the edge

* The figure of the facial region of this species given in the *Voyage dans L'Amérique Méridionale* (pl. 8, fig. 1[a]) improperly represents the external maxillipeds with this angle truncate and not at all produced laterally.

thin and four lobed; the median lobes are very much the largest, are evenly rounded, and a little more prominent than the lateral, which project as small obtusely triangular teeth. The superior margin of the orbit is broken by two incisions leaving the margin between them projecting as a slight, rounded lobe. The post-orbital tooth is short and slender, and is separated from the second tooth of the antero-lateral margin by a broad sinus which breaks the margin completely. The remaining teeth of the antero-lateral margin are triangular in form, much thickened vertically, and separated by quite broad sinuses, and the posterior two on each side are very slender and of nearly equal prominence.

Beneath, the edge of the front is thin and projects sharply downward. The epistome is smooth and its labial border has a small lobe in the middle, a slight notch each side and another at each angle of the buccal area. The external maxillipeds are smooth except the merus, which is slightly granulated and also has the antero-exterior angle very slightly produced laterally and not at all rounded. The inferior margin of the orbit is prominent and divided into two lobes by a deep and narrow sinus; the inner lobe forms a stout tooth which projects as far forward as the inner angle of the superior margin; the outer lobe is broad and its exterior angle projects slightly in advance of the post-orbital tooth. The external hiatus of the orbit is a deep triangular notch. In one specimen, however, it is wholly closed on one side, possibly from some accident. The sub-orbital and sub-hepatic regions are quite coarsely granulous. The tubercle of the sub-hepatic region forms a slight granulous prominence just beneath the post-orbital tooth. The sub-branchial region is pubescent and slightly granulous. In the male, the sternum is smooth and the abdomen quite narrow, being narrowest at the penultimate segment, and the terminal segment is about five-sixths as long as broad, and its extremity evenly rounded. In the female the abdomen is broadly ovate, the greatest breadth being at the fourth segment.

The chelipeds are a little unequal. The carpi are granular-rugose externally and have a deep groove along the outer margin next the articulation with the hand. The hands are slightly rugose above, and the fingers are slender, deflexed, marked with slight, impressed longitudinal lines and slightly and obtusely toothed within, and the dactylus in the larger hand usually has a stout tooth at the base. The ambulatory legs are slender, and pubescent along the edges of all the segments and over the whole surface of the dactyli.

Alcoholic specimens are light olive brown above and on the chelipeds. The fingers are black, lighter at the tips, and the black not spreading upon the palm.

Several specimens give the following measurements:

Sex.	Length of carapax.	Breadth of carapax.	Ratio.
Male.	15·0mm	22·5mm	1 : 1·50
"	15·9	23·6	1 : 1·49
Female.	9·6	14·4	1 : 1·50
"	12·6	18·8	1 : 1·49

Seven specimens were collected by Prof. Hartt at the Reefs of the Abrolhos.

This species is very distinct from all other described species of the genus. Its broad and deeply areolated carapax give it somewhat the aspect of a *Chlorodius*.

Eriphia gonagra Edwards.

Cancer gonagra Fabricius, Supplementum Entomologiæ systematicæ, p. 337, 1798.

Eriphia gonagra Edwards, Histoire naturelle des Crust., tome i, p. 426, pl. 16, fig. 16, 17, 1834; Annales des Sciences naturelles, 3me série, tome xvi, 1851, pl. 8, fig. 10; White, List of Crust. in the British Museum, p. 22; Gibbes, loc. cit., p. 177; Dana, United States Exploring Expedition, Crust., p. 250; Stimpson, Annals Lyc. Nat. Hist., New York, vol. vii, p. 217; Heller, Reise der österreichischen Fregatte Novara um die Erde, p. 24, 1865.

A large number of specimens are in the collection, all of them obtained at the Reefs of the Abrolhos. It seems to be a common species from southern Florida to Rio de Janeiro.

A number of specimens give the following measurements:

Sex.	Length of carapax.	Breadth of carapax including spines.	Ratio.
Male.	17·2mm	24·8mm	1 : 1·44
"	24·0	34·5	1 : 1·44
"	25·6	36·8	1 : 1·44
"	26·8	37·8	1 : 1·41
"	30·8	43·5	1 : 1·41
Female.	17·6	25·7	1 : 1·46
"	19·6	28·2	1 : 1·44
"	23·0	33·2	1 : 1·44
"	28·2	41·3	1 : 1·46

Callinectes Danæ Smith.

Lupa diacantha Dana, United States Exploring Expedition, Crust., p. 272, pl. 16, fig. 7, 1852.

Callinectes diacanthus Ordway, Monograph of the genus Callinectes, Boston Journal Nat. Hist., vol. vii, p. 575, 1863. (*Non Portunus diacanthus* Latreille, *nec Lupa diacantha* Edwards, *nec Callinectes diacanthus* Stimpson.)

A number of specimens which agree perfectly with the description of this species given by Ordway, were collected at Pernambuco by Prof. Hartt.

A single female from Bahia does not differ from the Pernambuco specimens except in having the sub-median tooth of the front very short, scarcely projecting beyond the median teeth—probably an accidental character.

Several specimens give the following measurements:—

	Sex.	Length of carapax including sub-frontal spine.	Breadth of carapax including lateral spine.	Ratio.
Pernambuco.	Male.	41·9mm	93·0mm	1 : 2·22
"	"	44·3	97·4	1 : 2·20
	"	47·2	106·5	1 : 2·26
"	Female.	41·8	91·0	1 : 2·17
"	"	44·8	94·8	1 : 2·12
Bahia.	"	34·4	76·0	1 : 2·21

This species was known to Ordway only from Dana's original specimen collected at Rio de Janeiro.

Callinectes ornatus Ordway, loc. cit., p. 571, 1863.

A male specimen collected at Caravellas agrees perfectly with Ordway's description and with a specimen from Bermuda.

Length of carapax including sub-frontal spine, 36·2mm; breadth of carapax including lateral spines, 80·5mm; ratio of length to breadth, 1 : 2·22.

A sterile female collected at the same locality may belong to this species. It differs from the male in being thicker and more convex, the areolation more strongly marked, and the granulations coarser; the teeth of the antero-lateral border are less prominent and more obtuse; and the chelipeds are quite short, the merus not reaching, by considerable, the tip of the lateral spine.

Length of carapax, 34·6mm; breadth of carapax, 75·0; ratio 1 : 2·14.

In the deeply areolated carapax it approaches the *larvatus*, and it may possibly belong to that species.

The description and figure of *Neptunus marginatus* A. Edwards* agrees very closely with this specimen, the figure of the abdomen and sternum representing it perfectly, and there can be little doubt that Edwards' species was based on a sterile female of some species of *Callinectes*. If the habitat, *Côte du Gabon*, given by Edwards be correct, it is safely inferred that the genus *Callinectes* is not confined to the American coasts.

* Archives du Muséum d'Histoire naturelle, tome x, p. 318, pl. 30, fig. 2, 1861.

The *C. ornatus* was previously known from South Carolina, Tortugas, Hayti, and Cumana.

Callinectes larvatus Ordway, loc. cit., p. 573, 1863.

One specimen of this species, a male, was collected at Bahia. It is very much like the *Danæ* and the *ornatus* in the carapax, etc., but differs remarkably in the male abdominal appendages of the first pair (intromittent organs), which are very short, directed inward till they cross and then the extremities curved abruptly outward.

Length of carapax including sub-frontal spine, 38·8mm; breadth including lateral spines, 82·4mm; ratio of length to breadth, 1 : 2·11.

Ordway's specimens were from Florida, Bahama, and Hayti.

Achelous spinimanus DeHaan.

Portunus spinimanus Latreille, Encyc., t. x, p. 188 (*teste* Edwards).

Lupa spinimana Leach, Desmarest, Considérations générales sur la classe des Crust., p. 98, 1825; Edwards, Histoire naturelle des Crust., tome i, p. 452, 1834; Gibbes, loc. cit., p. 178; Dana, United States Exploring Exepedition, Crust., p. 273; Stimpson, Annals Lyc. Nat. Hist., New York, vol. vii, p. 57.

Achelous spinimanus, DeHaan, Fauna Japonica, p. 8, 1833; White, List of Crust. in the British Museum, p. 28, 1847; Stimpson, Annals Lyc. Nat. Hist., New York, vol. vii, p. 221, 1860; A. Edwards, Archives du Muséum d'Histoire naturelle, tome x, p. 341, pl. 32, fig. 1, 1861; Heller, op. cit., p. 27.

Three specimens, all females, collected at Bahia, give the following measurements:—

Length of carapax including frontal teeth.	Breadth of carapax including lateral spines.	Ratio of length to breadth.
37·0mm	61·5mm	1 : 1·66
44·4	77·4	1 : 1·74
56·0	95·0	1 : 1·70

All the specimens have the lateral spine of the carapax nearly or quite twice as long as the one next in front of it. They appear to differ in no way from specimens from Florida.

Achelous Ordwayi Stimpson.

Achelous Ordwayi Stimpson, Annals Lyc. Nat. Hist., New York, vol. vii, p. 242, 1860.

Neptunus Ordwayi A. Edwards, op. cit., *addenda*, 1861.

A male specimen of this fine species was collected, with the last, at Bahia.

The carapax is narrower than in *A. spinimanus*, and the front more advanced. In areolation it resembles the *spinimanus* very much, the elevations however are not quite so thickly granulated. The teeth of the

front are very long and slender, the length of the median ones exceeding slightly the distance between their tips. The teeth of the antero-lateral margin are much longer and slenderer than in *spinimanus*, the posterior one (lateral spine) being but slightly longer, in proportion to the other teeth, than in that species. The chelipeds are slender and fully as long as in *spinimanus*. The ambulatory legs are long and very slender, those of the first two pairs extending nearly to the middle of the dactyli of the chelipeds.

The sternum is convex in an antero-posterior direction, while in the *spinimanus* it is quite flat. In the male the terminal portion of the abdomen is narrowly triangular, the penultimate segment being quite narrow and its lateral margins straight or very slightly concave, while in the *spinimanus* it is broad and the lateral margins of the penultimate segment quite convex.

The male abdominal appendages of the first pair are very different in the two species. In both they are stout and separated by quite a broad space. In the *spinimanus* they reach beyond the middle of the penultimate segment of the abdomen, the thick basal portion curving strongly inward from the base, the slenderer portion at first directed nearly straight forward, then curved strongly outward, and the tips inward again. In the *Ordwayi* they are much shorter, reaching but slightly beyond the antipenultimate segment of the abdomen, and have but a single curve, curving inward from the base, then outward to the tip.

Length of carapax in the single specimen, $37{\cdot}0^{mm}$; breadth of carapax, $61{\cdot}8^{mm}$; ratio of length to breadth, 1 : 1·67; breadth excluding lateral spines, $48{\cdot}0^{mm}$; ratio of length to this breadth, 1 : 1·29; greatest length of merus segments of chelipeds, $31{\cdot}0^{mm}$; length of hand, right, 47·2, left, $47{\cdot}0^{mm}$. A male specimen of *A. spinimanus* from Florida gives the following:—length of carapax, $40{\cdot}4^{mm}$; breadth of carapax, $69{\cdot}5^{mm}$; ratio of length to breadth, 1 : 1·72; breadth excluding spines, $58{\cdot}5^{mm}$; ratio of length to this breadth, 1 : 1·44.

This species differs from the figure of *Neptunus cruentatus* (A. Edwards, op. cit., p. 326, pl. 31, fig. 2) in having much longer chelipeds, the merus projecting much farther beyond the sides of the carapax, and the hands when folded in front lapping by each other considerably. The teeth of the front and of the antero-lateral margin are very much more slender and prominent than in his figure. And in the description of the *cruentatus* no mention is made of the smooth and highly iridescent spaces on the supero-exterior surface of the hand, which is

mentioned by Stimpson in his description of *A. Ordwayi*, and is a very conspicuous character in the species.

I have retained this species in the genus *Achelous* of DeHaan instead of *Neptunus* of the same author, because the narrow carapax, prominent front, and the form of the external maxillipeds and of the male abdomen ally it very closely to the *spinimanus*, and, together with the narrow dactyli of the first three pairs of ambulatory legs, separate it widely from *Neptunus pelagicus*, the type of the genus *Neptunus*.

The length of the lateral spine of the carapax, which appears to have been A. Milne Edwards' principal character for separating these genera, seems to be of slight importance, and in the present case, if used alone, is scarcely sufficient for a specific distinction.

Stimpson's specimens of *A. Ordwayi* were from Florida and St. Thomas.

Goniopsis cruentatus DeHaan.

Cancer ruricola DeGeer, Mémoires pour servir á l'histoire des Insectes, tome vii, p. 417, pl. 25, 1778 (*non Cancer ruricola* Linné).

Grapsus cruentatus Latreille, Histoire des Crust. et Insects, tome vi, p. 70, 1803; Desmarest, op. cit., p. 132; Edwards, Histoire naturelle des Crust., tome ii, p. 85; Gibbes, loc. cit., p. 181.

Goniopsis cruentatus DeHaan, op. cit., p. 33, 1835; Edwards, Annales des Sciences naturelles, 3me série, tome xx, 1853, p. 164, pl. 7, fig. 2; Stimpson, Proceedings Acad. Nat. Sci., Philadelphia, 1858, p. 101; Heller, op. cit., p. 43.

Grapsus longipes Randall, Journal Acad. Nat. Sci., Philad., vol. viii, p. 125, 1839.

Goniopsis ruricola White, List of Crust. in the British Museum, p. 40, 1847; Saussure, op. cit., p. 30, pl. 2, fig. 18, 1858.

Goniograpsus cruentatus Dana, American Journal Sci., 2d series, vol. xii, p. 285, 1851; United States Exploring Expedition, Crust., p. 342, pl. 21, fig. 7, 1852.

A single male of this beautiful species was collected at the Reefs of the Abrolhos.

Cryptograpsus cirripes, sp. nov.

Plate I, figure 3.

The carapax above is granulous and naked The front as seen from above is nearly straight with only a slight median immargination. The orbits are broad, the margin slightly upturned and broken by a broad notch near the inner angle. The outer orbital teeth are long, acutely pointed, project straight forward, and the distance between their tips is nearly equal to two-thirds the breadth of the carapax. The succeeding teeth of the antero-lateral margin are prominent and acutely pointed, the third tooth much smaller than the others, and the

fourth or last tooth with a slender spiniform tip directed forward and upward and with a sharp granulated ridge extending from its base inward upon the branchial region and nearly parallel to the postero-lateral margin. The areolation is well pronounced and agrees in the main with *C. angulatus* Dana. In the depression on each side just in front of the anterior lobes of the branchial region there is a transverse line of three obscure, oval, smooth spots. From the small tooth in the postero-lateral margin, a short ridge extends backward just above and parallel to the margin as far as the lateral angle of the carapax.

The chelipeds are stout and equal. The merus is triangular and the angles granulous. The carpus, and the hand nearly to the tips of the fingers, are sharply granulous. The fingers are slender and their inner edges nearly straight and armed with regular rounded tuberculiform teeth.

In the ambulatory legs the meral segments are granulous above and on the angles. The dactyli of the first three pairs are naked except a few hairs on the posterior edge at the base, slender, somewhat curved, smooth and deeply sulcate; those of the posterior pair are shorter, compressed, and their edges thickly clothed with soft hairs. In the first pair of legs the posterior edge of the propodus is clothed nearly its whole length with a brush of soft hair; in the second pair there is a similar brush but only on the terminal half; in the third pair it is wholly wanting, or represented only by a few hairs near the articulation with the dactylus. In the posterior pair of legs the edges of the dactylus, propodus and carpus are densely clothed with soft hair.

The male sternum is concave in a lateral direction, and the articulations between the segments of the abdomen are nearly straight instead of curved as in *C. angulatus*.

Length of carapax in a male, $31{\cdot}0^{mm}$; breadth of carapax, $35{\cdot}6^{mm}$; ratio of length to breath, 1 : 1·15. Breadth between outer orbital teeth, $24{\cdot}8^{mm}$; ratio of this breath to breath of carapax between lateral teeth, 1 : 1·43.

This species was not obtained by Prof. Hartt. The only specimens which I have seen are two males, in the collection of the Peabody Academy of Science, Salem, Mass., brought from Rio de Janeiro by Capt. Harrington.

The *C. cirripes* differs from *C. angulatus* Dana (United States Exploring Expedition, Crust., p. 352, pl. 22, fig. 6), from Rio Negro, Northern Patagonia, and heretofore the only known species of the

genus, in having the front as seen from above nearly straight instead of deeply bilobed, in the much greater breadth of the carapax between the outer orbital teeth—the ratio of this breadth to the breadth of the carapax between the lateral teeth being in *C. angulatus*, 1 : 1·68,—and in the ciliated posterior legs.

Uca cordata.

Cancer cordatus Linné, Amœnitates Academicæ, tome vi, p. 414, 1763; Systema Naturæ, editio xii, tome i, p. 1039; Herbst, op. cit., Band i, p. 131, Tab. 6, fig. 38.
Cancer uca Linné?, Systema Naturæ, editio xii, tome i, p. 1041.
Uca lævis? Dana?, United States Exploring Expedition, Crust., p. 375.
(*Non Uca una* Guérin, Iconographie du Règne animal, Crust., pl. 5, fig. 3, *nec* Edwards, Histoire naturelle des Crust., tome ii, p. 22, et Règne animal de Cuvier, 3me édit., pl. 19, fig. 1.)

A single specimen of this species was obtained by Prof. Hartt at Bahia. There are also specimens from Pará in the collection of the Peabody Academy. All the specimens examined were males.

The carapax is entirely naked and perfectly smooth above, very broad, the greatest breadth being much anterior to the middle, and very convex in an antero-posterior direction. The cervical suture is very distinctly indicated, especially in the middle of the carapax, where there is a broad depression on each side at the antero-lateral angle of the cardiac region. The gastric region is broad and flattened in the middle, the antero-lateral lobes are only indistinctly separated from the median, and the posterior portion is rounded and slightly protuberant but is still lower than the branchial region. The cardiac region is very large, scarcely divided, and the posterior portion extends far back between the bases of the posterior pair of legs. The branchial regions are swollen, evenly rounded above and wholly undivided, and the lateral margins are very convex in the anterior portion and are indicated by a very slight denticulated ridge. The whole front is bordered by a sharply raised margin; the median lobe projects almost perpendicularly downward between the orbits, and its margin is regularly curved. The orbits are very large, and the margin is broken by a broad and deep hiatus on the lower side at the outer extremity, just over which the outer angle of the superior margin projects as a rounded lobe; the inferior margin is nearly straight and is formed of two nearly parallel ridges, the inferior of which is armed with a line of small tubercles, and the superior is irregularly granulous. The inferior obital regions are perfectly smooth and separated from the buccal area by deep sulci. The inferior lateral regions are swollen and nearly smooth, there being only a few small

and scattered granules on the anterior portion near the inferior orbital region. On each side of the buccal area there is a high ridge which is armed with a few small tubercles.

The external maxillipeds are smooth and naked on the outside, and the inner edge and the palpus thickly clothed with coarse hairs.

The chelipeds are somewhat unequal and very large. The merus is stout, sharply triangular, both the inferior angles are armed with stout spines and the superior angle is coarsely granulous. The carpus is broad, smooth and evenly rounded on the outside, and spinous along the inner edge and on the anterior edge beneath. The hand is broad, compressed, spinous on the superior margin and on the inside, the inferior margin granulous, and the outer side smooth; the fingers are high and compressed, their tips strongly incurved, and the inner edges slightly separated in the middle and armed with small irregular teeth except at the tips, which are slightly spoon-shaped with the edges horny, continuous and sharp.

The ambulatory legs are smooth and naked above, but all the segments in the first three pairs, except the basal ones, are thickly clothed beneath and on the anterior side with very long coarse hair. Those of the anterior pair are longer than the others, and those of the posterior pair are much shorter than the others and but slightly hairy. The dactyli of the first two pairs are very long and stout, slightly curved downward, their extremities compressed vertically and five-sided with the angles sharp; those of the third pair are much shorter and curved backward as well as downward; those of the posterior pair are still shorter, strongly curved backward and six-sided, the superior side being much broader than the others.

The sternum is narrow, very convex in an antero-posterior direction, and the depression for the lodgement of the abdomen is broad, very deep, and extends quite to the base of the maxillipeds. The male abdomen is broadest at the third segment; the second segment is very small, and the two segments which precede it are completely coalesced. The appendages of the first segment are triquetral and very stout and extend to the extremity of the penultimate segment. The appendages of the second segment are very small, extending scarcely beyond the third segment.

Length of carapax, $54{\cdot}0^{mm}$; breadth of carapax, $73{\cdot}4^{mm}$; ratio, 1 : 1·36. Length of merus in right cheliped, $33{\cdot}8^{mm}$; in left cheliped, 33·0. Length of right hand, 49·5; length of left hand, 49·0.

One of the specimens in the collection of the Peabody Academy of Science has the chelipeds much more unequal than in the specimen described above but agrees with it in all other characters.

There are at least three American species of *Uca*:—the *U. cordata*, described above and the *U. una* (the species figured by Guérin and Edwards), from the east coast, and *U. lævis*, the species described and figured by Edwards in the Archives du Muséum d'Histoire naturelle, tome vii, p. 185, pl. 16, from the west coast.

The synonymy of these species appears to be in much confusion. The *Cancer cordatus* of Linné is described at length in the Amœnitates Academicæ, and is evidently the species described above and the same as the one figured by Herbst. The description of *C. uca* in the Systema Naturæ is very short and indefinite and no characters are given by which it could be distinguished from the *C. cordatus*.

Milne Edwards in his Historie naturelle de Crust., 1837, quotes both these species under his *Uca una* Latreille; he gives "l'Amérique méridionale" as the habitat of *U. una*, and describes a new species, *U. lævis*, from "les Antilles." The slight descriptions of his *lævis* here given would not distinguish it from the *U. cordata*. In his review of the Ocypodoidea in the Annales des Sciences naturelles, 3me séries, tome xx, 1853, these species are again briefly characterized and the same habitas given. In 1854, in the Archives du Muséum, loc. cit., he describes *U. lævis* at length and figures it, but says, "Je ne connais que des individus mâles de cette espéce; la plupart ont été rapportés des environs de Guayaquil, par M. Eydoux." The description and figure here given apply well to specimens in the Museum of Yale College collected at Guayaquil by Mr. Bradley, and distinguish it readily from the Atlantic species. To add to the confusion, Lucas in D'Orbigny's Voyage dans l'Amérique méridionale, Crust., p. 23, 1843, gives, without description, "*Uca una* Latr." as coming from "Environs de Guayaquil: M. Eydoux," evidently having the same specimens before him that Edwards has described and figured in the Archives du Muséum! If Edwards' original specimens of *lævis* were from the West Indies as stated, they are probably the *U. cordata*, but, even if this be the case, since the east coast species is evidently the *Cancer cordatus* of Linné, the name *lævis* may be retained for the west coast species to which Edwards's last and fullest description and his figure apply.

White, in the list of Crustacea in the British Museum, p. 31, 1847, has "*Uca cordata*" from the West Indies and Brazil, but quotes as synonyms, *Cancer uca* and *C. cordatus* of Linné, *C. cordatus* of Herbst, and *Uca una* of Guérin and Edwards, evidently confounding the two Atlantic species and intending to restore the older of the Linnean names.

Cardiosoma quadratum Saussure

Cardisoma quadrata Saussure, op. cit., p. 22, pl. 2, fig. 13, 1858.

Cardisoma dorsum Gill, Annals Lyc. Nat. Hist., New York, vol. vii, p. 42, January, 1859. [Wrongly printed 1858 on the third signature.]

A number of specimens were collected at Pernambuco.

It is at once distinguished from the *C. Guanhumi* by the more quadrate form of the carapax, the branchial regions being much less swollen, by the lateral margin being marked by a distinct carina instead of evenly rounded, and by the sharply triangular and spiny merus of the chelipeds. Some of the specimens collected by Prof. Hartt are nearly as large as ordinary specimens of *C. Guanhumi* and still retain the distinctive characters, so that it seems scarcely possible that it can be the young of that species as suggested by Saussure.

This species is in fact more nearly allied to the *C. carnifex* than to *C. Guanhumi*, and it resembles so closely a species in the collection of the Peabody Academy of Science from the west coast of Africa —apparently the *C. armatum* of Herklots,—that it might readily be mistaken for it. The African species differs however in having the carapax less convex and the carina of the lateral margin less prominent; the front is broad and high, the anterior lobes of the gastric region are protuberant and the depressed space between them and the frontal margin is coarsely granulous, while in the *quadratum* the anterior gastric lobes are not protuberant and the depressed space between them and the frontal margin is scarcely granulous. The epistome and the nasal lobe are quite different in the two species; in the *quadratum* the spistome is nearly straight and its anterior margin is not granulated, the nasal lobe is high, forming rather more than a semicircle, and the lobes of the front on each side of it do not reach down to the anterior margin of the epistome, while in the African species the epistome is higher, more curved and the anterior margin granulated in the middle, and the nasal lobe is much lower, so that the lobes of the front on each side of it reach quite down to the anterior margin of the epistome. Finally the chelipeds and ambulatory legs in the African species are more spiny and granulous.

Specimens of *C. quadratum* give the following measurements:—

	Male.	Male.	Female.	Female.
Length of carapax,	42·6mm	45·6mm	43·3mm	46·8mm
Breadth of "	53·4	55·8	53·3	56 6
Ratio of length to breadth,	1 : 1·25	1 : 1·22	1 : 1·23	1 : 1·21
Length of merus in right cheliped,	21·7mm	28·4mm	20·8mm	24·4mm
" " hand " " "	29·0	51·8	30·2	37·0
" " merus in left "	26·8	23·2	23·4	——
" " hand " " "	46·0	31·8	35·5	——

ANOMOURA.

Dromidia Antillensis Stimpson.

Dromidia Antillensis Stimpson, Proceedings Acad. Nat. Sci., Philadelphia, 1858, p. 225, 1859; Annals Lyc. Nat. Hist., New York, vol. vii, p. 71, 1859.

Several specimens of this species were obtained by Prof. Hartt at the Reefs of the Abrolhos. They give the following measurements and ratios:

Sex.	Length of carapax including frontal teeth.	Breadth of carapax.	Ratio.
Male.	15·5mm	15·6mm	1 : 1·01
"	18·2	18·5	1 : 1·02
Female.	16·0	16·0	1 : 1·00
"	18·0	18·2	1 : 1·01

All the specimens have a covering of tough, fleshy sponge, much broader than themselves, held closely upon the carapax.

Stimpson's specimens were from Florida and St. Thomas.

Petrochirus granulatus Stimpson.

Pagurus granulatus Olivier, Encyclop., tome viii, p. 640 (*teste* Edwards); Edwards, Observations Zoologiques sur les Pagures, Annales des Sciences naturelles, 2de série, tome vi, p. 275, 1836; Histoire naturelle des Crust., tome ii, p. 225; Dana, United States Exploring Expedition, Crust., p. 453.

Petrochirus granulatus Stimpson, Proceedings Acad. Nat. Sci., Philadelphia, 1858, p. 233, 1859; Heller, op. cit., p. 85.

A single specimen in a *Scolymus* was collected by Prof. Hartt at the Reefs of the Abrolhos.

Calcinus sulcatus Stimpson.

Pagurus sulcatus Edwards, Annales des Sciences naturelles, 2de série, tome vi, p. 279, 1836; Histoire naturelle des Crust., tome ii, p. 230.

Pagurus tibicen White (*variety*), List of Crust. in the British Museum, p. 61.

Calcinus sulcatus Stimpson, Proceedings Acad. Nat. Sci., Philadelphia, 1858, p. 234.

A male of this species was collected at the Reefs of the Abrolhos. Length of body from front of carapax to tip of abdomen, 23·5mm; length of left hand, 7·6; breadth of left hand, 4·5.

It is closely allied to *C. tibicen* Dana and *C. obscurus* Stimpson, but differs remarkably from both of them in the deep and rugose sulcus on the outer side of the propodus of the left leg of the second ambulatory pair. This sulcus is very marked, extends the whole length of the segment, and is limited on the upper side by a sharp carina. From the *obscurus* it differs moreover in having the carapax broader in front, and the antero-lateral angle more prominent, and not rounded, as it is

in that species. The larger hand is much narrower and more cylindrical, and the dactyli of the ambulatory legs are not so strongly curved as in *C. obscurus*.

Clibanarius vittatus Stimpson.

Pagarus vittatus Bosc, Histoire naturelle des Crust., tome ii, p. 78, pl. 12, fig. 1, 1802; Edwards, Histoire naturelle des Crust., ii, p. 237; Gibbes, loc. cit. p. 189.

Clibanarius vittatus Stimpson, Proceedings Acad. Nat. Sci., Philad., 1858, p. 335, 1859; Annals Lyc. Nat. Hist., New York, vol. vii, p. 84.

Several specimens were collected at Caravellas, Province of Bahia. They do not differ perceptibly from Florida specimens, except that the hands are perhaps a little less tuberculose.

Clibanarius sclopetarius Stimpson.

Cancer sclopetarius Herbst, op. cit., Band ii, p. 23, Tab. 23, fig. 3, 1796.

Pagurus sclopetarius Bosc, Histoire naturelle des Crust., tome ii, p. 76, 1802; Edwards, Histoire naturelle des Crust., tome ii, p. 229.

Clibanarius sclopetarius Stimpson, Proceedings Acad. Nat. Sci., Philadelphia, 1858, p. 235, 1859; Annals Lyc. Nat. Hist., New York, vol. vii, p. 85.

A single specimen was collected in shoal water at the mouth of the Caravellas River, Province of Bahia.

Clibanarius Antillensis Stimpson.

Clibanarius Antillensis Stimpson, Proceedings Acad. Nat. Sci., Philadelphia, 1858, p. 235, 1859; Annals Lyc. Nat. Hist., New York, vol. vii, p. 85.

I refer to this species a large number of specimens collected at the Reefs of the Abrolhos.

It is certainly very closely allied to *C. Brasiliensis* Dana (United States Exploring Expedition, Crust., p. 467, pl. 29, fig. 7), but the opthalmic scales are somewhat larger than represented in Dana's figure, and the right leg of the third pair convex upon the outside. In the alcoholic specimens the ground color of the hands and ambulatory legs is reddish-yellow, instead of olive.

MACROURA.

Scyllarus æquinoxialis Fabricius.

Scyllarus æquinoxialis Fabricius, Supplementum Entomologiæ systematicæ, p. 399, 1798; Bosc, op. cit., tome ii, p. 19; Edwards, Histoire naturelle des Crust., tome ii, p. 285, pl. 24, fig. 6.

A single male specimen collected at Bahia appears to belong to this species.

The carapax is broad, the breadth in front exceeding slightly the length of the lateral margin, evenly convex above, the regions scarce-

ly indicated, and covered, as is also the upper side of the abdomen, with small squamiform tubercles of uniform size, and each bearing several small fascicles of short setaceous hairs. The anterior margin, the margin of the orbits, and the lateral margin are armed with numerous, small, obtusely rounded, tuberculiform teeth.

The antennulæ extend slightly beyond the tips of the antennæ; the basal segments are clothed below with short setæ; the terminal segments of the peduncle are smooth and cylindrical; the inner flagella are nearly as long as the last segment of the peduncle, sparsely ciliate and tapering regularly to a slender point; the outer flagella are stouter, and considerably shorter than the inner. In the antennæ, the basis is very short and broad, so that, on the outside, the base of the ischium nearly touches the anterior margin of the carapax; the ischium is much broader than long, the middle portion rough and hairy, the outer and anterior margins smooth and naked, and the edges slightly and irregularly toothed, except the process on the inner side which has two strong teeth upon its inner edge and a smaller one on the anterior edge toward the articulation with the merus; the carpal, or last segment, is broader than long, the edge arcuate and crenulated, the middle portion above and below roughened with short, stiff hairs, but a broad space along the margin smooth.

All the inferior surface of the thorax and the exposed parts of its appendages are rough with short, stiff hairs or setæ. The thoracic legs have a carina upon the posterior edge of the merus and carpus, which is very high and thin on the merus in all except the posterior pair. The dactyli in the first and second pairs are smooth and unarmed, but in the second pair they are longer and much slenderer than in the first; in the last three pairs they are armed with fascicles of stout horny setæ.

The lamellæ of the appendages of the second segment of the abdomen are lanceolate, and the inner and outer of about equal size. The appendages of the three succeeding segments are rudimentary and scarcely project below the edge of the segments. The lamellæ of the appendages of the penultimate segment are broadly rounded at the extremities, and the inner ones project beyond the tip of the terminal segment. The terminal segment is broader than long, and the extremity truncate with the angles rounded.

The following description of the colors was taken from the specimen when recently preserved in alcohol, and when, according to Prof. Hartt, the colors were as in life.

General color above reddish-brown; antennæ lighter, bordered with bright purple, and the teeth of the edge orange-red; antennulæ light

reddish; carapax with the frontal and median tubercles, the tubercles of the orbits and of the anterior and lateral margins orange-red; first segment of the abdomen bright orange, the median portion slightly mottled with purplish-red, and with two large circular reddish-purple spots; the succeeding segments with the smooth anterior portion, orange mottled with purplish-red; terminal segment and the lamelliform appendages of the penultimate segment brownish-yellow, almost white at the extremities. Beneath, dirty yellowish; antennæ with the colors of the upper side dimly repeated; legs with slight purple annulations at the articulations.

Length of body from tip of rostrum to extremity of abdomen,	190·0mm
" of carapax from tip of rostrum to middle of posterior margin,	86·0
Breadth of carapax,	71·2
Length of antennulæ, below,	55·0
" antennæ, "	52·0
" first thoracic legs,	76·0
" second "	92·0
" third "	83·5
" fourth "	72·0
" fifth "	75·0

Panulirus echinatus, sp. nov.

This species is closely allied to *P. guttatus*.

The carapax is armed with numerous stout spines, those on the anterior part of the carapax larger than those behind; the surface between the spines is closely filled with small tubercles, which are beset with short, stiff hairs, and many of the tubercles in front of the cervical suture are tipped with spinules. The cervical suture is marked by a deep depression.

The antennulary segment is armed with two straight and slender spines which project forward and upward, their length twice as great as the distance between their tips. The superior orbital spines are stout and long, and extend slightly beyond the tips of the eyes. On the anterior border below the eye, there are two other spines projecting over the base of the antennæ; from the inner of these there is a line of about eleven smaller spines, three of which are in front of the cervical suture, extending to the postero-lateral angle of the carapax; below this line there are no spines on the branchial region. Just behind each of the superior orbital spines there is a stout spine as large as the spines on the anterior margin below the eye; behind these spines, and in front of the cervical suture, there are four smaller spines, thus forming, with the orbital spines, two-subdorsal lines of four spines each, which are succeeded behind the cervical suture, by two

lines of five small spines each. On the median line of the anterior part of the gastric region there are three small, sharp spines. The remaining spines of the carapax are disposed irregularly.

The peduncle of the antennula extends slightly beyond the peduncle of the antenna; the basal segments are armed with short setæ. The inner flagellum is about as long as the carapax, quite slender and wholly naked; the outer flagellum is shorter, much stouter, and the terminal portion ciliated beneath.

The peduncle of the antenna is a little longer than the breadth of the carapax, and is armed with stout spines, three of which are on the anterior edge of the basis, and another on the inner side, below and near the outer of the three spiniform teeth of the anterior edge of the epistome. The flagellum is about three times as long as the carapax, tapers to a slender point, and is armed with sharp spines.

The external maxillipeds, when extended, reach nearly to the anterior extremity of the basis of the antennæ, and all the segments are thickly clothed on the inside, and the dactylus all round, with stiff hairs; the exognath is rudimentary, about half as long as the dactylus of the endognath, quite slender, and is wholly without a flagellum.

The thoracic legs are smooth and naked, except the dactyli and the outer portion of the under side of the propodi; the meral segments are each armed with two sharp spines, one above and another on the inside at the extremity next the articulation with the carpus. The legs of the first pair are shorter than the others, do not reach quite as far forward as those of the second pair, and the dactyli are stout and thick. Those of the second and third pairs are more slender than the others, especially the penultimate segments, the dactyli straight nearly to the tips, which are hooked abruptly down. The third pair reach slightly beyond the second. The fourth pair extend only to the middle of the propodi of the third pair; the carpus is armed with a stout and sharp spine on the upper edge of the extremity next the propodus, where there is no spine in the other legs; the dactylus is stout, the basal portion armed beneath with slender spines, which are articulated at the base and movable, and the terminal portion tapering to a slender point and curved evenly downward. The legs of the fifth pair reach to the middle of the propodi of the fourth; the coxa is armed with a long, sharp spine on the posterior side and near the articulation with the basis; the dactylus in the male is similar to that in the fourth pair, but shorter and more curved; in the female the dactylus is somewhat shorter than in the male, and armed on the posterior side of the base with a stout process which closes against a

similar process from the extremity of the propodus, both processes being hairy upon the outside and having horny, spoon-shaped tips.

The abdomen is nearly smooth, and all the segments, except the terminal, are crossed by a narrow and thickly ciliated sulcus, which is interrupted in the middle on the third, fourth and fifth segments. The first segment has a single, short lateral tooth. The remaining segments, except the last, have this tooth spiniform and very large, and a small additional one behind it; the larger tooth is armed, except in the penultimate segment, with one or two small spines or denticles on the anterior edge, near the base. The posterior edge of the penultimate segment above is armed with close set, sharp teeth.

The lamelliform appendages of the sixth segment of the abdomen are of about equal length, broad and truncate at the tips. The lamella of the last segment is slightly narrowed and truncate at the tip, and does not extend beyond the lamellæ of the sixth segment. In the male, the lamellæ of the second to the fifth segment are ovate and all of about the same size. In the female, these lamellæ are very much larger; in the second segment, the inner one is of the same form and nearly of the same size as the outer; in the three following segments the outer lamellæ decrease in size successively, and the inner lamellæ are each composed of two branches, the outer branch being narrow, triangular, its edges thickened, multi-articulate and clothed with long hairs; the inner branch slender, not tapering, articulated at the base of the outer branch, not jointed like the outer branch, but composed of a single piece, and clothed beneath and at the tip with long hairs.

Two specimens give the following measurements:—

	Male.	Female.
Length of body from base of antennulæ to extremity of abdomen,	135·0mm	165·0mm
Length of carapax from base of antennulæ to middle of posterior margin,	59·5	68·5
Breadth of carapax,	36·2	42·2
Length of antennulæ,	103·0	109·0
" inner flagellum of antennulæ,	61·4	64·0
" outer " "	48·0	50·8
" antennæ,	260·0	290·0
" first thoracic legs,	81·0	89·0
" second, "	92·5	102·2
" third, "	101·0	111·0
" fourth, "	83·0	92·5
" fifth, "	72·5	77·0

Several specimens were obtained at Pernambuco.

This species appears to be closely allied to the *P. guttatus* of the West Indies, but that species, according to Edwards' description and figure

(Histoire Naturelle des Crust., tome ii, p. 297, pl. 23, fig. 1 and 2,) has the thoracic legs of the second pair longer than those of the third; he also states that the transverse sulci of the abdomen are not interrupted on the first three segments; and moreover, in his figures no spines are indicated upon the bases of the antennæ, or upon the coxæ of the posterior thoracic legs, and the flagella of the antennæ and the antennulæ are much shorter than in our species.

Heller (op. cit., p. 95) and DeHaan (op. cit., p. 159), both state that in the *guttatus* the spaces between the spines of the carapax are smooth, while in our species they are tuberculose and hairy. Neither Edwards, De Haan nor Heller mention the sub-cheliform posterior thoracic legs as a character of the female of *P. guttatus*.

Alpheus heterochelis Say.

Alpheus heterochelis Say, Journal Acad. Nat. Sci., Philadelphia, vol. i, p. 243, 1818; Edwards, Histoire naturelle des Crust., tome ii, p. 356; Gibbes, loc. cit., p. 196.
Alpheus armillatus Edwards?, Histoire naturelle des Crust., tome ii, p. 354, 1837.
Alpheus lutarius Saussure, op. cit., p. 45, pl. 3, fig. 24, 1858.

A large number of specimens collected at the Reefs of the Abrolhos agree perfectly with specimens from Florida and Aspinwall.

Palæmon Jamaicensis Olivier.

Cancer (*Astacus*) *Jamaicensis* Herbst, op. cit., Band ii, p. 57, Tab. 27, fig. 2, 1796.
Palæmon Jamaicensis Olivier, Encyclop., tome viii, (*teste* Edwards,); Desmarest, op. cit., p. 237; Edwards, Histoire naturelle des Crust., tome ii, p. 398, Règne animal de Cuvier, 3e édit., pl. 3, fig. 4; Saussure, op. cit., p. 49.

Of this species there are in the collection two specimens, both males, from Penêdo, Rio Sao Francisco.

In both specimens the rostrum is stout, a little shorter than the antennal scale, and is armed above with twelve, and below with four teeth. The anterior legs are longer than the carapax, and nearly naked, except a few fascicles of hairs on the fingers; the hands are slender, and about half as long as the carpus, which is slightly shorter than the merus. In the smaller specimen the second pair of legs are equal, stout, very long, and thickly beset with small spines; the hands are cylindrical, much longer than the carapax, and the fingers half as long as the palmary portion of the hand. In the larger specimen the legs of the second pair are quite unequal, the left one being considerably longer and much stouter than the right, and the fingers only a third as long as the palmary portion; the right hand is much as in the other specimen, but considerably smaller in proportion. In both specimens the penultimate segment of the abdomen is broad,

the lamellæ of its appendages are broadly rounded at their extremities, and the outer ones slightly broader, but scarcely longer, than the inner. The terminal segment of the abdomen is stout, its extremity broad, rounded, ciliate, and has a small movable spine on each side.

A single, small and somewhat imperfect specimen, also a male, from Caravellas, Province of Bahia, is apparently the young of this species, but presents some differences. The rostrum is armed with fifteen teeth above and three below, and the legs of the second pair are quite short, extending but little beyond the first pair, sparsely spinulose, and the hands quite slender. In other respects it agrees closely with the larger specimens.

The three specimens give the following measurements:—

	Penedo,	Sao Francisco.	Caravellas.
Length from tip of rostrum to extremity of abdomen,	151·0mm	126·0mm	54·4mm
Length of carapax from orbit to middle of posterior margin,	48·0	41·2	18·0
Breadth of carapax,	27·2	23·5	9·8
Length of rostrum from its tip to base of eyes,	21·8	18·6	8·0
" basal scale of antenna,	23·0	19·0	8·8
" first thoracic legs,	68·0	57·8	26·0
" merus in first thoracic legs,	17·8	15·0	7·0
" carpus, " "	21·0	16·6	8·4
" hand, " "	12·0	10·5	4·3
" dactylus, " "	5·8	5·2	2·1
" second thoracic legs,	114·0—132·0	115·0	31·2
" merus in second thoracic legs,	20·0— 25·5	25·0	5·9
" carpus, " "	16·8— 24·0	17·2	6·0
" hand " "	54·0— 58·0	59·0	10·8
" dactylus, " "	27·2— 21·0	30·0	5·3

Palæmon forceps Edwards.

Histoire naturelle des Crust., tome ii, p. 397, 1837; Saussure, op. cit., p. 51; White, List of Crust. in the British Museum, p. 78.

A large number of specimens of this species was obtained by Prof. Hartt at the mouth of the Pará.

The larger males agree with Edwards' description. The carapax is granulous, especially on the sides. The rostrum is stout, nearly straight, extends slightly beyond the antennal scale, and is armed above with nine or ten, and below with five to seven teeth. The antennal and hepatic spines are stout and of about equal size. The legs of the second pair are very long, cylindrical, the inner and the inferior sides of the merus, carpus and the basal half of the hand are armed with about four longitudinal lines of slender spines, the upper and outer

sides thickly set with short spinules and slightly hairy; the fingers are slender, cylindrical and thickly covered with a woolly pubescence. The lamelliform appendages of the penultimate segment of the abdomen are broadly rounded at their tips, and the outer ones are scarcely longer than the inner. The terminal segment of the abdomen is narrower than in *P. Jamaicensis*, the sides are straight, and the tip has a strong median tooth and a slender spine each side.

The young males are quite similar to the full-grown, but the carapax is nearly smooth, the rostrum somewhat upturned at the extremity, and the legs of the second pair are smaller in proportion, and the spines and spinules less developed.

The females differ remarkably from the males, all the specimens being considerably smaller, and resembling the young males. The carapax is much more gibbous and quite smooth, even in the largest specimens. The rostrum in front of the eyes curves upward considerably, and much more strongly in the small than in the large specimens. The legs of the second pair are quite slender, much shorter than in the male, only slightly spinulose in the large specimens, and almost wholly smooth and naked in the smallest. Of the ten specimens in the collection every one has large masses of eggs under the abdomen.

Five specimens given the following measurements :—

	Male.	Male.	Male.	Female.	Female.
Length of body from tip of rostrum to extremity of abdomen,	142·0mm	125·0mm	75·0mm	106·0mm	76·0mm
Length of carapax from orbit to middle of posterior margin,	36·4	33·5	19·6	27·4	18·0
Breadth of carapax, -	23·8	20·4	11·8	18·4	11·2
Length of rostrum from its tip to base of eyes, - -	31·0	29·0	17·2	22·6	20·0
Length of basal scale of antenna,	26·5	23·0	15·2	19·7	14·5
" first thoracic legs,	57·0	50·0	31·0	40·0	27·4
" merus in first thoracic legs, - - -	15·2	13·0	7·6	10·4	7·4
Length of carpus, - -	19·2	17·4	10·5	13·4	9·4
" hand, - -	8·0	7·6	4·8	6·0	4·0
" second thoracic legs,	171·0—158·0	143·0	67·0—43·0	75·0	43·0
" merus in second thoracic legs, - - -	35·0— 32·4	28·0	13·4— 9·8	15·0	8·5
Length of carpus, -	50·2— 44·0	40·0	20.0—10·0	20·2	14·0
" hand, - -	60·2— 56·0	50·0	22·6—14·0	22·5	10·8
" dactylus, - -	28·0— 25·0	24·0	11·0— 7·5	11·0	5·2

Palæmon ensiculus, sp. nov.

Plate I, figure 2.

The carapax is somewhat gibbous, and the antennal and hepatic spines are slender, sharp and of about equal size. The rostrum is very long, strongly curved downward for the basal half of its length, the terminal half very slender, nearly straight, but strongly inclined upwards; it is armed above with nine to twelve short teeth, which are ciliated along their edges, and of which seven or eight are on the basal portion, and the others near the tip, and below with eight to twelve teeth.

The eyes are large and the peduncles rather long and slender. The flagella of the antennula are very long, the outer flagellum about as long as the whole body and the inner a little shorter. The peduncle of the antenna is armed with a small spine on the outside just below the articulation of the basal scale; the basal scale is long but not reaching, by considerable, the tip of the rostrum, the extremity evenly rounded and extending considerably forward of the small, acutely pointed tooth at the anterior extremity of the outer margin; the flagellum is very long, considerably exceeding in length the flegella of the antennulæ. The external maxillipeds are slender, reaching slightly beyond the base of the flagella of the antennæ.

The first pair of thoracic legs are very slender, reaching slightly beyond the basal scales of the antennæ, smooth and naked, except a few fascicles of hairs on the hands. The second pair of legs in the male are very long and quite slender, in full-grown specimens the merus reaching beyond the tip of the antennal scale and all the segments to the base of the fingers closely beset with short spinules; the hands are cylindrical, not swollen, the fingers slender and sparsely clothed with short, downy pubescence. In the females and young the second pair of legs are considerably smaller and much less spinulose. The third pair of legs reach to the tips of the basal scales of the antennæ. The fourth and fifth pairs are successively a little longer.

The abdomen is rather slender. The penultimate segment is long and narrow, the length above being nearly or quite twice as great as the breadth; the lamelliform appendages are rather narrow, the inner ones rather acutely rounded at the tips and reaching a little beyond the terminal segment of the abdomen, the outer ones evenly rounded at the tips and considerably longer than the inner ones. The terminal segment is narrow and tapers regularly to a very slender and acute point.

Several specimens give the following measurements:—

	Male.	Male.	Female.	Female.
Length of body from tip of rostrum to extremity of abdomen,	108·0mm	91·0mm	89·0mm	65·0mm
Length of carapax from orbit to middle of posterior margin,	25·0	19·3	21·0	14·4
Breadth of carapax,	15·5	12·0	13·6	9·0
Length of rostrum from its tip to base of eyes,	29·0	26·0	21·0	20·6
" basal scale of antenna,	19·0	16·0	16·0	12·8
" first thoracic legs,	36·4	27·0	28·5	20·0
" merus in first thoracic legs,	9·6	7·5	8·0	5·7
" carpus " "	11·8	9·0	8·8	6·6
" hand " "	4·8	4·2	4·0	3·0
" second thoracic legs,	103·0	54·0	55·7	32·0
" merus in second thoracic legs,	21·0	11·4	11·2	7·2
" carpus " "	30·0	16·7	17·0	10·4
" hand " "	32·5	14·4	15·5	7·0
" dactylus " "	14·8	6·7	6·5	2·8

A large number of specimens of this fine species were obtained by Prof. Hartt at Pará.

Peneus Brasiliensis Latreille.

Peneus Brasiliensis Latreille, Nouveau Dictionnaire d'Histoire naturelle, tome xxv, p. 154 (*teste* Edwards); Edwards, Histoire naturelle des Crust., tome ii, p. 414; White, List of Crust. in the British Museum, p. 80; Gibbes, loc. cit., p. 198.

I refer to this species a large number of small specimens obtained by Prof. Hartt at Bahia. They agree perfectly with a specimen from the west coast of Florida, which is undoubtedly the same as the species described by Gibbes from South Carolina.

Xiphopeneus, gen. nov.

The carapax is much as in *Peneus*, but the rostrum is very long, its extremity very slender, and the gastro-hepatic sulcus is scarcely perceptible, while the cervical and branchio-cardiac sulci are distinct. The antennulæ are long and slender, and the peduncle has only a very small lamelliform appendage on the inside, which is not foliaceous and expanded over the eye as in *Peneus;* the flagella are very long and slender, the upper ones being much stouter and longer than the lower. The antennæ, maxillipeds and the three anterior pairs of thoracic legs are nearly as in *Peneus*. The fourth and fifth pairs of thoracic legs are very long, and the terminal segments very slender and flagelliform. The abdomen is quite similar to *Peneus*, but the lamellæ of the appendages of the first five segments are much longer than is usual in that genus.

This genus has much the aspect of *Peneus*, and is closely allied to it in the antennæ, maxillipeds, anterior thoracic legs and abdomen, but differs from it remarkably in the carapax, antennulæ and posterior thoracic legs.

Xiphopeneus Harttii, sp. nov.

Plate I, figure 1.

The carapax is not at all swollen; a very slight, rounded dorsal carina extends from the base of the rostrum to the posterior border; the cervical and branchio-cardiac sulci are very distinct, and together form a nearly straight groove from near the base of the antennæ almost to the posterior border; the inferior margin of the carapax is nearly straight, projecting slightly along the branchial region; the antennal spine is prominent and rather stout, and the hepatic spine slender and acute. The rostrum is very long and slender, in length nearly equalling or considerably exceeding the carapax, wholly unarmed below, but the basal portion armed above with a thin and high carina, which extends back upon the carapax a short distance, and forward as far as the eyes, and is armed with five sharp and prominent teeth, and at its posterior extremity with another tooth which is smaller, much below the level of the others, and separated from them by a considerable space; the portion in front of the eyes is nearly straight or a little upturned, sub-cylindrical, slightly flattened laterally, unarmed, perfectly smooth and tapers to a very slender point far in front of the antennal scales.

The eyes are of moderate size, and the peduncles much shorter than in most species of *Peneus*.

The appendages upon the inside of the peduncle of the antennulæ are surmounted by a tuft of hairs which fills a little depression in the ocular peduncle. The first antennulary segment in advance of the eye is sub-cylindrical, flattened on the under side, and nearly as long as the peduncle of the eye; the next anterior segment is cylindrical and one-half as long as the last. The upper flagellum of the antennula is slender, about three times as long as the carapax, and has a short portion at the base slightly thicker than the rest; the lower flagellum is very slender and about half as long as the upper.

The basis of the antenna is armed with a small, sharp spine just below the articulation of the antennal scale. The antennal scale reaches to the base of the flagella of the antennula, is much narrowed toward the tip, the outer margin is straight and armed with a sharp tooth at the anterior extremity, and the inner margin is nearly straight and

thickly ciliated. The three anterior segments of the peduncle are cylindrical, and the last (carpal) is much longer than in most species of *Peneus*, so that it reaches to the middle of the antennal scale. The flagellum is very much longer than the whole length of the body.

The second pair of maxillipeds, when extended, reach nearly to the base of the antennal scale; the merus is nearly three times as long as broad, and thickly hairy on the inner edge; the exognath is very slender, clothed along the edges with long cilia, and scarcely reaches the tip of the extended dactylus. The external maxillipeds reach slightly beyond the middle of the antennal scale and are thickly setose along the inner edges; the exognath is slender, extends slightly beyond the merus of the endognath, and is ciliated as in the maxillipeds of the second pair.

The thoracic legs of the first pair reach about to the middle of the propodus of the external maxillipeds, are slender and beset with stiff hairs along the edges, and the basis is armed with a short spine on the inner side near the articulation with the ischium. The second and third pairs of legs are successively a little longer, perfectly smooth, and the basal segments unarmed. The legs of the fourth and fifth pairs are smooth and unarmed, and all the segments, except the coxal and basal, are very slender and very much prolonged, the terminal segments being fully as slender as the terminal portions of the flagella of the antennulæ.

The abdomen is compressed, and upon the fourth, fifth and sixth segments there is a dorsal carina which is high and sharp upon the sixth, and terminates posteriorly in a slight tooth upon the fifth and sixth. The terminal portion of the appendages of the first segment is long, slender and ciliated along the edges; in the appendages of the four succeeding segments the outer of the terminal branches are like the terminal portion of the appendages of the first segment, and of about the same length, while the inner branches are but half as long. The penultimate segment is strongly compressed, and its lamelliform appendages are rather long and narrow, the inner ones projecting considerably beyond the terminal segment, ciliated along both edges and narrowly triangular at tip, the outer ones ciliated along the inner edges and rounded at the tip. The terminal segment tapers regularly to a very slender and acute point, the edges of the terminal half are ciliated, and there is a deep median groove upon the dorsal surface.

In the male, the appendages of the first abdominal segment (plate I, fig. 1[a]), are connected together near their bases by a peculiar sexual

organ which depends between them, and consists of a central tubular portion articulated with the bases of the abdominal appendages by a short process on each side and furnished at the lower extremity with two stiff, horn-like, tubular processes. The central portion is open on the posterior side for its whole length, and the membrane of which it is composed is folded into deep longitudinal grooves, except on the anterior side which is smooth and flattened, and traversed longitudinally by a median suture. The horn-like, terminal processes curve slightly backward and downward, and have an opening on the lower side at the tips. The inner of the terminal branches of the appendages of the second abdominal segment are furnished at the base on the anterior side with a small, ovoid, flattened, cushion-like organ which is wanting in the appendages of the other abdominal segments, and in all of those of the female.

Three specimens give the following measurements:—

	Male.	Female.	Female.
Length of body from tip of rostrum to extremity of abdomen,	87·0mm	133·0mm	112·0mm
Length of carapax from orbit to middle of posterior margin,	18·0	31·8	25·5
Breadth of carapax,	8·5	15·0	12·5
Length of rostrum from tip to base of eyes,	22·0	31·5	26·0
" basal scale of antenna,	13·4	20·8	18·4
" first thoracic legs,	17·5	29·0	25·4
" hand in first thoracic legs,	4·3	7·7	6·1
" second thoracic legs,	22·2	41·5	35·0
" hand in second thoracic legs,	5·4	10·0	8·2
" third thoracic legs,	31·5	58·0	46·0
" hand in third thoracic legs,	6·2	12·8	9·8
" merus in fourth thoracic legs,	14·2	32·2	20·0
" carpus, " "	14·6	——	——
" fifth thoracic legs,	85+	——	——
" merus in fifth thoracic legs,	17·5	27·0	23·5
" carpus " "	21·0	27·5	29·4
" propodus " "	23·0	——	——
" dactylus " "	16+	——	——
" first pair of abdominal appendages,	21·6	32·0	29·0
" second " "	22·0	32·5	29·4

Several specimens of this remarkable species—all of them somewhat broken and in rather bad condition—were obtained by Prof. Hartt at Caravellas, Province of Bahia.

SQUILLOIDEA.

Gonodactylus chiragra Latreille (?).

Squilla chiragra Fabricius, Supplementum Entomol. systematicæ (*teste* Edwards).
Gonodactylus chiragrus Latreille, Encyclopédie méthodique, tome x, p. 473, plate 325, fig. 2 (*teste* Edwards); Edwards, Histoire naturelle des Crust., tome ii, p. 528, Gibbes, loc. cit., p. 201.

A species of *Gonodactylus* was collected by Prof. Hartt at the Reefs of the Abrolhos and at Caravellas, Province of Bahia, which does not differ from the common West Indian and Florida species. The American species is, however, very likely distinct from the true *G. chiragra* of the old world.

In the foregoing list 32 species are mentioned, of which 21 appear to be new to the fauna of Brazil; and of these 21 species, 6 are described as new to science, and the remaining 15 are all species previously known from the West Indies or Florida.

In order to give a better idea of the crustacean fauna of the whole Brazilian coast, I append the following list.

List of the described species of Brazilian Podopthalmia.

Previous to Milne Edwards' general work,* scarcely anything was known of the crustacea of South America, and even in this work Edwards records Brazil as the habitat of very few species. Some additional species, however, are recorded in his later papers on the Ocypodoidea,† and Alphonse Milne Edwards has added a single species in his monograph of the Portunids.‡ A few other species are mentioned in short papers by Bell,§ Weigman,‖ and Bate,¶ and quite a

* Histoire naturelle des Crustacés. Paris; tome i, 1834; ii, 1837; iii, 1840.

† Observations sur la Classification des Crustacés. Annales des Sciences naturelles, 3me série; De la famille des Ocypodides, tome xviii, 1852, pp. 128–166, pl. 3–4; Suite (1), tome xx, 1853, pp. 163–228, pl, 6–11.—Notes sur quelques Crustacés nouveaux ou peu connus. Archives du Muséum d'Histoire naturelle, Paris, tome vii, pp. 145–192, pl. 9–16, 1854.

‡ Etudes zoölogiques sur les Crustacés récents de la famile des Portuniens. Archives du Muséum d'Histoire naturelle, Paris, tome x, pp. 309–428, pl. 28–38, 1861.

§ Some Account of the Crustacea of the coasts of South America. Transactions Zoölogical Society, London, vol. ii, pp. 39–66, pl. 8–13, 1841, and Proceedings Zoölogical Society, 1835, pp. 169–173.

‖ Beschreibung einiger neuen Crustaceen des Berliner Museums aus Mexiko und Brasilien. Archiv für Naturgeschichte, 1836, Band i, pp. 145–151.

¶ Carcinological Gleanings, No. III. Annals and Magazine of Natural History, 4th series, vol. i, June, 1868, p. 447.

number of species are indicated by White in the list of Crustacea in the British Museum,* but unfortunately descriptions of many of the new species have not yet appeared. But by far the largest accessions to our knowledge of the crustacea of this coast were made by Prof. Dana in his work on the Crustacea of the United States Exploring Expedition.† Although the expedition touched on the Brazilian coast only at Rio de Janeiro, over forty species of Podophthalmia alone were collected and described. More recently Heller has enumerated the species taken by the naturalists accompanying the Austrian Expedition round the world during the years 1857–1859.‡ Unfortunately, however, this expedition also touched only at Rio de Janeiro, and consequently but few species were obtained which were not observed by Dana.

From the works of these authors, Prof. Harrt's collection, and a few species in the collection of the Peabody Academy of Science, the following list has been compiled.

A few species, of which the localities are questionable or suspected are preceded by a mark of doubt, thus (?), but all queries which are not inclosed in parenthesis are quoted directly from the author whose name they precede. When I have personally examined specimens from the localities mentioned, they are followed by an !. In all other cases the authority on which it is inserted follows the locality.

BRACHYURA.

MAIOIDEA.

Maiidæ.

Libinia spinosa Edwards.

"Les côtes du Brésel" (Edwards, Hist. nat. des Crust., tome i, p. 301).

Libidoclea Brasiliensis Heller.

Rio de Janeiro (Heller, op. cit., p. 1).

Mithracidæ.

Mithrax hispidus Edwards.

Abrolhos! (Hartt). — Antilles (Edwards). Tortugas, Key Biscayne (Stimpson). South Carolina (Gibbes).

Mithraculus coronatus Stimpson.

Abrolhos! (Hartt).—Aspinwall! (F. H. Bradley). Tortugas (Stimpson).

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* List of the specimens of Crustacea in the collection of the British Museum. London. 1847.

† United States Exploring Expedition, during the years 1838–42, under command of Charles Wilkes, U. S. N., vol xii. Crustacea. Philadelphia, 1852. Plates, 1855.

‡ Reise der österreichischen Fregatte Novara um die Erde. Zoöl. Theil, zweiter Band, dritte Abtheilung, Crustaceen. Wien, 1865.

Eurypodidæ.

(?) *Eurypodius Latreillii* Guérin.

Rio de Janeiro (Bell, Transactions Zoölogical Society, London, vol. ii, p. 40).—Chili (Edwards and Lucas, Bell, White, Dana).—"Les îles Malouines" (Edwards, Hist. nat. des Crust., tome i, p. 284).

There is probably some confusion of localities here. Bell alone mentions the species as coming from Brazil, and as he had it also from Chili, some interchange of specimens may have taken place. The Chilian species is very likely distinct from the East Indian one.

Periceridæ.

Milnia bicornuta Stimpson.

Abrolhos! (Hartt).—Aspinwall! (F. H. Bradley). Antilles (Edwards, Saussure). Jamaica (White). Florida Keys! (E. B. Hunt). Bermudas! (J. M. Jones).

Peltinia scutiformis Dana.

Rio de Janeiro (Dana).

Acanthonyx Petiverii Edwards.

"Coast of Brazil" (Bell).—Antilles (Edwards).—(?) Valparaiso (Dana). (?) Galapagos Islands (Bell).

Epialtus Brasiliensis Dana.

Rio de Janeiro (Dana).

Epialtus marginatus Bell.

"Ad oras Brasiliæ" (Bell, Proceedings Zoöl. Soc., London, part iii, 1835, and Transactions Zoöl. Soc., London, vol. ii, p. 62).—"Ad Insulas Galapagos" (Bell, Transactions Zoöl. Soc., loc. cit.).

The specimens from the two coasts are probably distinct species, and if so the name *marginatus* should be retained for the Brazilian one, as in the first description Bell mentions only the Brazilian specimen. There is some confusion in regard to the locality from which the west coast specimen came, the habitats being given as quoted above, but in the remarks following the description in the Transactions, it is stated that the male specimen came from Valparaiso, where it was found in company with *E. dentatus* by Mr. Cuming.

Lucippa levis Dana.

Rio de Janeiro (Dana).

CANCROIDEA.

Xanthidæ.

Xantho parvula Edwards.

Brazil (Edwards).—Antilles (Edwards). Cape de Verdes (Stimpson).

Xantho dispar Dana.

Rio de Janeiro? (Dana).

Xantho denticulata White.

Abrolhos! (Hartt).—West Indies (White). Aspinwall! (F. H. Bradley). Bermudas! (J. M. Jones).

(?) *Menippe Rumphii* DeHaan.

Rio de Janeiro? (Dana). Pernambuco (White).—Jamaica (White).—East Indies (Herbst, Edwards, etc.).

The American species is probably distinct from the true *Rumphii* of the East Indies.

Panopeus politus Smith.

Abrolhos! (Hartt).

Panopeus Harttii Smith.

Abrolhos! (Hartt).

Panopeus Herbstii Edwards.

Rio de Janeiro (Heller, op. cit., p. 16).—Aspinwall! East and west coast of Florida! Bahamas! South Carolina!

Chlorodius Floridanus Gibbes.

Abrolhos! (Hartt)—Key West! (Gibbes). Aspinwall! (F. H. Bradley).

Pilumnus Quoyi Edwards.

Rio de Janeiro (Edwards).

Eriphidæ.

Eriphia gonagra Edwards.

Rio de Janeiro (Dana, Heller). Abrolhos! (Hartt).*—Aspinwall! (F. H. Bradley). Tortugas (Stimpson). Florida Keys! (E. B. Hunt). Bahamas! (Coll. Bost. Soc. Nat. Hist.).—(?) Panama (Stimpson).

Portunidæ.

Callinectes ornatus Ordway.

Caravellas! (Hartt).†—Cumana; Hayti; Tortugas; Bahamas; South Carolina (Ordway). Bermudas! (J. M. Jones).

Callinectes larvatus Ordway.

Bahia! (Hartt).—Hayti; Tortugas; Key West; Bahamas (Ordway).

Callinectes Danæ Smith.

Pernambuco! (Hartt). Rio de Janeiro (Dana).

Acheloüs spinimanus DeHaan.

Rio de Janeiro (Dana, Heller). Bahia! (Hartt).‡—South Carolina (Stimpson, A. Edwards). West Florida! (E. Jewett). Martinique (A. Edwards).

Acheloüs Ordwayi Stimpson.

Bahia! (Hartt).—St. Thomas; Tortugas; Bay Biscayne (Stimpson).

Acheloüs Sebæ. (*Neptunus Sebæ* A. Edwards).

"Les côtes du Brésil" (A. Edwards).—Martinique (A. Edwards).

Cronius ruber Stimpson.

Brazil (Edwards, White, A. Edwards). Rio de Janeiro (Heller).—St. Thomas (Stimpson). Gulf of Mexico; Vera Cruz (A. Edwards). Key West (Gibbes).—Panama (Stimpson).

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* This species was collected from the whole coast. It is very lively, running over the rocks and hiding in holes at low water.—C. F. H.

† Taken in nets in shallow water on the borders of the bay.—C. F. H.

‡ Taken in shallow water and sold in the market for food.—C. F. H.

Arenæus cribrarius Dana.

Rio de Janeiro (Dana).—Guadaloupe; Gulf of Mexico; Vera Cruz (A. Edwards). Key West; South Carolina (Gibbes). New Jersey (Leidy).

PLATYONYCHIDÆ.

(?) *Carcinus Mœnas* Leach.

Rio de Janeiro (Heller, op. cit., p. 30)—European coast.

OCYPODOIDEA.

GONOPLACIDÆ.

Eucratopsis crassimanus. (*Eucrete crassimanus* Dana).*

Rio de Janeiro ? (Dana).

OCYPODIDÆ.

Gelasimus maracoani Latreille.

Rio de Janeiro (Dana). Pernambuco (White). Porto Seguro; St. Cruz (Hartt).—Cayenne (Edwards). West Indies (White).

Gelasimus palustris Edwards. (*G. vocans* Dana).

Rio de Janeiro (Dana, Stimpson).—Aspinwall; Hayti; Texas; South Carolina; Old Point Comfort (Stimpson).

Gelasimus mordax, sp. nov.

Pará! (Caleb Cooke, Coll. Peabody Acad. Sci.).

(?) *Gelasimus stenodactylus* Lucas.

"Brésil" (Edwards, Annales des Sci. nat., 3me série, tome xviii, 1852, p. 149).—Chili (Lucas, Edwards).

Ocypoda rhombea Fabricius.

Rio de Janeiro (Dana, Heller).—Jamaica (White).

GECARCINIDÆ.

Gecarcinus sp. White (List of Crust. in British Museum, p. 32).

Pernambuco (White).

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* Stimpson, from an examination of alcoholic specimens of *Eucrate crenatus* De Haan, has shown (Boston Journal Nat Hist., vol. vii, p. 588, 1863) that De Haan's genus *Eucrate* is distinct from the *Eucrate* as described by Dana, De Haan's genus having the male organs, or verges, arising from the coxæ of the posterior legs, and therefore belonging to the *Carcinoplacidæ* of Edwards, while Dana's species has sternal verges, and must therefore form the type of a new genus, for which I propose the name *Eucratopsis*. The genus thus constituted appears to be nearest allied to *Speocarcinus* Stimpson (Annals Lyc. Nat. Hist., New York, vol vii, p. 59, 1859), from which it is distinguished by the larger orbits, by the approximation of the inner margin of the maxillipeds, and by the much greater narrowness of the posterior part of the sternum.

Pelocarcinus Lalandei Edwards. (*Gecarcoidea Lalandei* Edwards).
Brazil (Edwards).

*Cardiosoma Guanhumi** Latreille.
Brazil (White).—Antilles (Edwards, Saussure). Florida Keys! (Gibbes). Cape de Verdes (Stimpson).

Cardiosoma quadratum Saussure.
Pernambuco! (Hartt).†—Aspinwall! (F. H. Bradley). Hayti (Saussure). Barbadoes; St. Thomas (Gill).

Uca cordata.
Bahia! (Hartt). Pará! (Coll. Peabody Acad. Sci.).—Surinam (Linné).

(?) *Uca una* Latreille, Edwards.‡
"Amérique méridionale" (Edwards). Rio de Janeiro (Von Martens, Zoöl. Record, vol. iv, 1867, p. 613).

TRICHODACTYLIDÆ.

Trichodactylus quadratus Edwards. (*T. fluviatilis* Latreille?).
Brazil (Edwards). Rio de Janeiro (Heller).

(?) *Trichodactylus punctatus* Eydoux et Souleyet?, Dana.
Rio de Janeiro (Dana).

Trichodactylus (?) *Cunninghami*. (*Uca Cunninghami* Bate).§
Tijuca, Province of Rio de Janeiro (Bate).

Sylviocarcinus Devillei Edwards (Archives du Muséum d'Hist. nat., tome viii, p. 176).
"Dans la rivière de l'Araguya, à Salinas, province de Goyas" (Edwards).

Dilocarcinus emarginatus Edwards (Archives du Muséum d'Hist, nat., tome viii, p. 181).
"Loretto, sur la Haute-Amazone" (Edwards).

Dilocarcinus pictus Edwards (Archives du Muséum d'Hist. nat., tome viii, p. 181).
"Loretto (Haute-Amazone)" (Edwards).

Dilocarcinus Castelnaui Edwards (Archives du Muséum d'Hist. nat. tome viii, p. 182).
"Salinas (province de Goyaz)" (Edwards).

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* Prof. Hartt informs me that this species, which lives in the mangrove swamps, is called *Guayamá*, and that it is mentioned under that name by Fonséca, so the specific name *Guanhumi* is probably a mistake for *Guayamá*.

† Taken in swamps.—C. F. H.

‡ According to Prof. Hartt a species of *Uca* is still called in Brazil *Vça-úna*. A tracing of the original figure of Marcgrave, however, indicates that his *Vça-úna* was not the *Uca una* of Latreille and Edwards, but more likely the *U. cordata*.

§ Annals and Mag. Nat. Hist., 4th series, vol. i, June, 1868, p. 447, pl. 21, fig. 3.

GRAPSIDÆ.

Goniopsis cruentatus DeHaan.

Rio de Janeiro (Dana, Heller). Abrolhos! (Hartt).*—Surinam (Randall). Cuba (Saussure). Florida Keys! (Coll. Bost. Soc. Nat. Hist.).

Pachygrapsus simplex Stimpson. (*Goniograpsus simplex* Dana).

Rio de Janeiro? (Dana).—Madeira (Stimpson).

Pachygrapsus intermedius Heller (op. cit., p. 44).

Rio de Janeiro (Heller).

(?) *Pachygrapsus innotatus* Stimpson (*Goniograpsus innotatus* Dana).

"Locality uncertain; probably from the South American coast" (Dana).—Madeira (Stimpson).

If Dana's specimens came from South America, as supposed, they were undoubtedly from Brazil, since Stimpson's discovery of it at Madeira shows it to be an Atlantic species and the Wilkes Exploring Expedition touched, on the east coast of South America, only at Rio de Janeiro and on the coast of Patagonia.

Pachygrapsus rugulosus. (*Leptograpsus rugulosus* Edwards).

"Brésil" (Edwards).

This species is very likely the same as *P. innotatus*, which, according to Stimpson, is scarcely to be distinguished from *P. transversus* Gibbes. Edwards' description, three lines in length, is, however, too imperfect to determine anything in regard to the affinity of the species.

Pachygrapsus maurus Heller (Lucas).

Rio de Janeiro (Heller).—Mediterranean (Lucas, Edwards, Heller).

(?) *Pachygrapsus marmoratus* Stimpson. (*Goniograpsus varius* Dana?).

Rio de Janeiro? (Dana).—Madeira (Stimpson, Heller). Gibraltar (Heller). Mediterranean (Edwards, Heller).

Cryptograpsus cirripes Smith.

Rio de Janeiro! (Coll. Peabody Acad. Sci.).

Nautilograpsus sp. ("*Planes* ——" White).

Brazil (White, List of Crust. in British Museum, p. 42).

Cyclograpsus integer Edwards.

Brazil (Edwards).—Florida (Stimpson).

Helice granulata Heller (op. cit., p. 61). (*Chasmagnathus granulatus* Dana).

Rio de Janeiro (Dana, Heller). Rio Grande! (Capt. Harrington, Peabody Acad. Sci.).

(?) *Sesarma angustipes* Dana.

South America (Dana).—Aspinwall; on the east coast of Central America, near Graytown; Florida (Stimpson).

Since this has proved to be an east coast and tropical species, there can be littl doubt that Dana's specimens were from Rio de Janeiro.

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* Found running about over the rocks at low tide on the fringing reef. It did not appear to be common.—C. F. H.

Aratus Pisonii Edwards. (*Sesarma Pisonii* Edwards).
Rio de Janeiro (Heller).—Antilles (Edwards). Jamaica (White). Florida (Gibbes, Stimpson).

CALAPPOIDEA.

HEPATIDÆ.

Hepatus angustatus White. (*H. fasciatus* Latreille, Edwards).
Rio de Janeiro (Dana, Heller).—Aspinwall (Stimpson).

ANOMOURA.

DROMIDÆ.

Dromidia Antillensis Stimpson.
Abrolhos! (Hartt).—St. Thomas!; Tortugas; Key Biscayne (Stimpson).

PORCELLANIDÆ.

Petrolisthes leporinus. (*Porcellana leporina* Heller).
Rio de Janeiro (Heller).
The figure and description given by Heller would scarcely distinguish this species from the *P. armatus* Stimpson (Gibbes sp.).

Petrolisthes Brasiliensis, sp. nov. (*Porcellana Boscii*? Dana, p. 421, pl. 26, fig. 11, *non* Savigny, Crust. Egypt, pl. 7, fig. 2).
Rio de Janeiro (Dana).

Pachycheles moniliferus Stimpson (Dana).
Rio de Janeiro (Dana).

Porcellana frontalis Heller.
Rio de Janeiro (Heller).

Minyocerus angustus Stimpson (Dana).
Rio de Janeiro (Dana).

HIPPIDÆ.

Hippa emerita Fabricius.
Rio de Janeiro (Dana, Heller).

CENOBITIDÆ.

Cenobita Diogenes Latreille.
Brazil (White, List of Crust. in British Museum, p. 61).

PAGURIDÆ.

Petrochirus granulatus Stimpson (Olivier).
Rio de Janeiro (Dana, Heller). Abrolhos! (Hartt).—Antilles (Edwards) Key West (Gibbes). West coast of Florida! (E. Jewett).

Calcinus sulcatus Stimpson (Edwards).

Abrolhos! (Hartt).—Antilles (Edwards).

White reports *C. tibicen* Dana from Brazil and the West Indies, but as he included *C. sulcatus* as a synonym, his specimens were perhaps all of this species.

Clibanarius Brasiliensis Dana.

Rio de Janeiro (Dana).

Clibanarius Antillensis Stimpson.

Abrolhos! (Hartt).—Barbadoes (Stimpson).

Clibanarius vittatus Stimpson (Bosc).

Abrolhos! (Hartt).—Key West; Charleston (Gibbes). West coast of Florida! (E. Jewett).

Clibanarius sclopetarius Stimpson (Herbst).

Caravellas River, in the Province of Bahia! (Hartt).—Trinidad (Stimpson). Aspinwall! (F. H. Bradley, Stimpson). Tortugas (Stimpson).

Eupagurus criniticornis Stimpson (Dana).

Rio de Janeiro (Dana).

(?) *Eupagurus scabriculus* Stimpson (Dana).

Brazil ? (Dana).

(?) Galateidæ.

Under the name of *Galathea amplectens*, Fabricius, in his supplementum Entomologiæ systematicæ, p. 415 (*teste* Edwards), has described a crustacean from Brazil which seems to be unknown to subsequent writers. It is probably not a true *Galathea*.

MACROURA.

Scyllaridæ.

Scyllarus æquinoxialis Fabricius.

Brazil (White). Bahia! (Hartt).*—Antilles (Edwards). Key West (Gibbes).

Palinuridæ.

Panulirus argus White. (*Palinurus argus* Latreille, Edwards).

Bahia (White).—Antilles (Edwards, White).

Panulirus echinatus Smith.

Pará! (Hartt) †

Palæmonidæ.

Alpheus heterochelis Say.

Abrolhos! (Hartt).—Aspinwall! (F. H. Bradley.) Cuba (Saussure). Key West (Gibbes). West coast of Florida! (E. Jewett). South Carolina (Gibbes, Say).

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* Taken in shallow water on the borders of the bay and used for food.—C. F. H.

† Used for food and sold in the market. I have seen it from much farther south.—C. F. H.

Alpheus tridentulatus Dana.
Rio de Janeiro ? (Dana).

Alpheus malleator Dana.
Rio de Janeiro ? (Dana).

Hippolyte exilirostratus Dana.
Rio de Janeiro (Dana).

Hippolyte obliquimanus Dana.
Rio de Janeiro (Dana).

Palæmon Jamaicensis Edwards.
Penêdo, Rio Sao Francisco! (Hartt).* Pernambuco (White).—Antilles (Edwards). Antilles and Gulf of Mexico (Saussure).

Palæmon spinimanus Edwards.
Brazil (Edwards, White).—Antilles (Edwards). Cuba (Gibbes).

Palæmon Olfersii Weigman (Archiv für Naturges. 1836, p. 150).
"An der Küste Braziliens" (Wiegman).

Palæmon forceps Edwards.
Pernambuco (White). Rio de Janeiro (Edwards). Mouth of the Pará! (Hartt).—Antilles, Gulf of Mexico (Saussure).

Palæmon acanthurus Wiegman (loc. cit., p. 150).
"Das Vaterland ist die Küste Braziliens" (Wiegman).

Palæmon ensiculus Smith.
Pará! (Hartt).

(?) "*Palæmon Lamarrei* Edwards?" (White).
Pernambuco (White).—Côtes du Bengale (Edwards).

Peneidæ.

Sicyonia carinata Edwards.
Rio de Janeiro (Edwards, Dana).

Peneus Brasiliensis Latreille.
Brazil (Latreille, White). Bahia! (Hartt).—West coast of Florida! (E. Jewett). South Carolina (Gibbes).

Peneus setiferus Edwards.
Rio de Janeiro (Heller).—Florida (Edwards). South Carolina (Gibbes).

Xiphopeneus Harttii Smith.
Caravellas, Province of Bahia! (Hartt).

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* This species, called *pitú*, is quite common in the river Sao Francisco and the larger streams flowing into it.—C. F. H.

SQUILLOIDEA.

Squillidæ.

Lysiosquilla inornata Dana.
Rio de Janeiro (Dana).

Squilla rubro-lineata Dana.
Rio de Janeiro (Dana).

Squilla prasino-lineata Dana.
Rio de Janeiro (Dana).

Squilla scabricauda Latreille.
Brazil (White).

Gonodactylus chiragra Latreille. (?)
Abrolhos! (Hartt). Caravellas, Province of Bahia! (Hartt).—Aspinwall! (F. H. Bradley). Florida Keys! (Gibbes). Bermudas! (J. M. Jones).—Mediterranean Red Sea; Pacific Ocean (Authors).

Erichthidæ.

Erichthus vestitus Dana.
South Atlantic, lat. 25° south, long. 44° west (Dana).

Erichthus spiniger Dana.
South Atlantic, between Rio Janeiro and Rio Negro (Dana.)

MYSIDEA.

Mysidæ.

Macromysis gracilis Dana.
Rio de Janeiro (Dana).

Rachitia spinalis Dana.
Atlantic, off the harbor of Rio de Janeiro (Dana).

Luciferidæ.

Lucifer acicularis Dana.
Harbor of Rio de Janeiro (Dana).

Zoea rubella Dana.
South Atlantic, lat. 24° 45′ south, long. 44° 20′ west (Dana

Zoea echinus Dana.
Atlantic, lat 23° south, long. 41° 5′ west (Dana).

EXPLANATION OF PLATE I.

Figure 1.—*Xyphopeneus Hurtii*, male. cephalothorax; a, b, c, d, e, thoracic legs, those of the fourth and fifth pairs incomplete. 1a, appendages of the first segment of the abdomen in the same specimen. 1b, rostrum of a larger, female specimen; 1c mandible enlarged two diameters,

Figure 2.—*Palæmon ensiculus*, male. carapax; 2a. leg of the second pair; 2b, extremity of abdomen, seen from above; 2c, rostrum of a small female.

Figure 3.—*Cryptograpsus cirripes*, male; 3a. sternum and abdomen of the same specimen.

Figure 4.—*Pa opeus politus*, female, carapax enlarged two diameters.

Figure 5.—*Panopeus Hurtii*, male, carapax enlarged two diameters.

All the figures are natural size, except 1c, 4 and 5, and all are copied from photographs, except 1a and 1c.